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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,240	11/13/2003	Khaled El-Maleh	030361	1165

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EXAMINER	
VO, TUNG T	

ART UNIT	PAPER NUMBER
2621	

NOTIFICATION DATE	DELIVERY MODE
03/16/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/713,240	EL-MALEH ET AL.	
	Examiner	Art Unit	
	Tung Vo	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-68* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-68* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11/13/03* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/15/2009 has been entered.

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the specification discloses ***a storage medium*** in paragraph [0062] of the application publication, the specification does not disclose ***"a computer-readable"*** storage medium.

Claim Rejections - 35 USC § 101

2. Claims 53-65 are rejected under 35 U.S.C. 101 because ***"instructions"*** as nonfunctional descriptive material is recorded on some computer-readable medium, in a computer or on an electromagnetic carrier signal, it is not statutory since no requisite functionality is present to satisfy the practical application requirement. Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored on a computer-readable medium, in a computer, or on an

electromagnetic carrier signal, does not make it statutory. **MPEP 2106.01 [R-6] Computer-Related Nonstatutory Subject Matter.**

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 6-8, 11-12, 23, 26, 28-29, 31, 46-47, 49, 51, 53-54, 59, and 61 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuchibhalta (US 5,731,835).

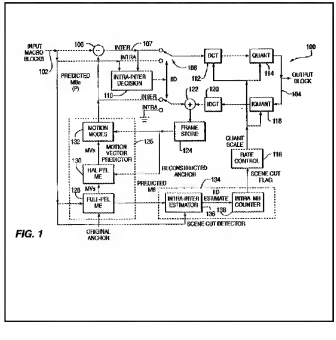

FIG. 1

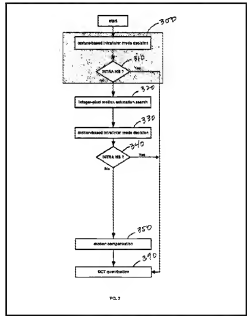

FIG. 9

Description	Kuchibhalta Figure 1	Invention Figures 2-3	
Texture intra/inter mode decision	110	200	300
Intra MB	INTRA, selection mode 108	Intra	310
Integer-pixel motion estimation	128, 130	232	320
Motion-based intra/intra mode decision	Motion Estimation 128, 130	232	330
Intra MB	Motion Estimation 128, 130	232	340
Motion Compensation	126	230	350
DCT quantization	112, 114	202, 204	390

Re claims 1, 6, 49, 59, Kuchibhalta discloses an apparatus for carrying out a method for categorizing in a video encoder (fig. 1) a portion of a video frame (107 of fig. 1, note a portion of a video frame is encoded, a residual macroblock), comprising:

means for using texture information (a video macroblock inherently has texture information) in the portion to determine whether the portion comprises at most a predetermined amount of spatial information (e.g. 110 of fig. 1);

means (108 of fig. 1) for categorizing the portion of the video frame if the texture information indicates that the portion comprises at most the predetermined amount of spatial information, then categorizing the portion as non-predictive (col. 3, lines 29-38, Variance of the input macroblock (Var I) is less than Variance of the residual macroblock (Var R), 108 of fig. 1, the switch selects intramode for encoding); and

if the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information (col. 3, lines 29-38, Variance of the residual

macroblock (Var R) is less than Variance of the input macroblock (Var R), 108 of fig. 1, the switch selects intermode for encoding), then

means for performing a motion estimation search (126 of fig. 1, e.g. 128 and 130 for motion estimation search in full and half pixels);

means for using motion information (126 of fig. 1) to determine whether the portion comprises at least a predetermined amount of predictive information (Predicted MB of fig. 1);

wherein the categorizing means (110 and 108 of fig. 1) categorizes if the motion information indicates that the portion comprises at least the predetermined amount of predictive information, then categorizing the portion as predictive (PREDICTED MBs of fig. 1); and if the motion information indicates that the portion does not comprise at least the predetermined amount of predictive information, then categorizing the portion as non-predictive (134-138, INTRA MB of fig. 1, IID ESTIMATE).

Re claims 2, 7, Kuchibhalta further discloses wherein the texture information comprises texture bits (e.g. 107 of fig. 1).

Re claims 3, 8, Kuchibhalta further discloses calculating a variance value of the portion of the video frame to generate the texture information (col. 3, lines 29-38, Note Var I and Var R).

Re claims 11, 61, Kuchibhalta further discloses wherein motion information comprises pixel differences between the portion of the video frame and at least a portion of at least one other video frame (e.g. 128 and 130 of fig. 1).

Re claim 12, Kuchibhalta further discloses a method for selectively encoding in a video encoder (fig. 1) a current macroblock using non-predictive encoding or predictive encoding, comprising:

using texture information of the current macroblock to determine whether to nonpredictively encode the current macroblock (col. 3, lines 29-38, Variance of the input macroblock (Var I) is less than Variance of the residual macroblock (Var R), 108 of fig. 1, the switch selects intramode for encoding); and

upon determining not to nonpredictively encode the current macroblock based on the texture information (col. 3, lines 29-38, Variance of the residual macroblock (Var R) is less than Variance of the input macroblock (Var R), 108 of fig. 1, the switch selects intermode for encoding), using motion information of the current macroblock to determine whether to predictively encode the current macroblock(126 of fig. 1, PREDICTED MBs of fig. 1).

Re claim 23, Kuchibhalta discloses an apparatus (fig. 1) for selectively reducing the processing cycles of a video codec, comprising:

a first complexity control element (110 of fig. 1) configured to use texture information of a current macroblock to determine whether to nonpredictively encode the current macroblock (col. 3, lines 29-38, Variance of the input macroblock (Var I) is less than Variance of the residual macroblock (Var R), 108 of fig. 1, the switch selects intramode for encoding), and

a second complexity control element (126 of fig. 1, based on 110 of fig. 1, note col. 3, lines 29-38, Variance of the residual macroblock (Var R) is less than Variance of the input macroblock (Var R), 108 of fig. 1, the switch selects intermode for encoding) configured to upon determining not to nonpredictively encode the current macroblock based on the texture information,

use motion information (e.g. 128 and 130 of fig. 1) of the current macroblock to determine whether to predictively encode the current macroblock (126, PREDICTED MBs, of fig. 1).

Re claims 26, 28, 46, 53 Kuchibhalta discloses an apparatus for categorizing a portion of a video frame, comprising:

Means (110 of fig. 1) for using texture information in the portion to determine whether the portion comprises at most a predetermined amount of spatial information;

Means (108 of fig. 1) for categorizing the portion as non-predictive if the texture information indicates that the portion comprises at most the predetermined amount of spatial information(col. 3, lines 29-38, Variance of the input macroblock (Var I) is less than Variance of the residual macroblock (Var R), 108 of fig. 1, the switch selects intramode for encoding); and

Means (126 of fig. 1) for using motion information to determine whether the portion comprises at least a predetermined amount of predictive information if the texture information indicates that the portion does not comprise at most the predetermined amount of spatial infoi-mation (126 of fig. 1, based on 110 of fig. 1, note col. 3, lines 29-38, Variance of the residual macroblock (Var R) is less than Variance of the input macroblock (Var R), 108 of fig. 1, the switch selects intermode for encoding).

Re claims 29, 47, 54, Kuchibhalta further discloses means for calculating a variance value of the portion of the video frame to generate the texture information (col. 3, lines 29-38)

Re claims 31, 51, Kuchibhalta further discloses determining when the portion is categorized as predictive, whether to perform fractional-pixel motion estimation based on a quality metric associated-with the portion (130 of fig. 1).

Re claim 56, Kuchibhalta further discloses comprising instructions that when executed by the processor cause the processor to upon determining not to nonpredictively encode the current macroblock based on the texture information, use motion information of the current macroblock to determine whether to predictively encode the current macroblock (InterMode, 126 of fig. 1, PREDICTED MBs).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 4-5, 9-10, 13-14, 30 35, 42, 48, 50, 55, 60, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuchibhalta (US 5,731,835) in view of Kato (US 6,415,055).

Re claims 4-5, 9-10, 13-14, 30 35, 42, 48, 50, 55, 60, and 66, Kuchibhalta further suggests that there are several functions that can be used to make this decision. For example, using the simplest function, if Var R is less than Var I, the IID selects the Intermode; if Var I is less than Var R, the IID selects the Intramode (110 of fig. 1).

However,Kuchibhalta does not particularly disclose wherein the predetermined amount of spatial information is an average variance value of at least one other video frame, means comparing the calculated variance value of the portion of the video frame to the average variance value of the at least one other, video frame; and if the variance value of the portion is less than the average variance value of the at least one other video frame, categorizing the portion as

nonpredictive; wherein the average variance value predetermined amount of spatial information is a scaled average variance value of at least one other another video frame as claimed.

However, Kato teaches calculating a variance value of the portion of the video frame to generate the texture information (col. 10, lines 9-col. 11, line 12, e.g. Eintra and Einter as variances); wherein the predetermined amount of spatial information is an average variance value of at least one other video frame (Einter= ½ (Ef+Eb), as average variance), means for comparing the calculated variance value of the portion of the video frame to the average variance value of the at least one other, video frame (Eintra<Einter, col. 11, lines 1-12); and if the variance value of the portion is less than the average variance value of the at least one other video frame (YES, Eintra<(Einter= ½ (Ef=Eb)), categorizing the portion as nonpredictive (the intra mode is select, which means the portion is intra macroblock); wherein the average variance value predetermined amount of spatial information is a scaled average variance (1/2(Ef+Eb), col. 10, lines 65-67) value of at least one other video frame.

Taking the teachings of Kuchibhalta and Kato as a whole, it would have been obvious to one of ordinary skill in the art to modify the teachings of Kato into the apparatus of Kuchibhalta to provide a moving image encoding method and apparatus which is capable of increasing coding efficiency even in a case of a prediction structure where two or more B-pictures exist between I-and P-pictures or between P-pictures.

7. Claims 15-17, 36-38, 43, 57-58, and 67-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuchibhalta (US 5,731,835) in view of Sun (US 6,014,181).

Re claims 15-17, 36-38, 43, 56-58, and 68, Kuchibhalta further teaches wherein using motion information of the current macroblock to determine whether to predictively encode the current macroblock comprises determining pixel differences between the current macroblock and a macroblock from another video frame with factional-pixel motion estimation (128 and 130 of fig. 1).

It is noted that Kuchibhalta does not particularly teaches determining a sum of absolute distance values between the current macroblock and macroblocks from at least one other video frame, if the pixel differences between the current macroblock and the macroblock from another video frame is less than a configurable threshold value, then determining to predictively encode the current macroblock; if the sum of absolute distance values is less than a scaled average minimum sum of absolute distance values of macroblocks from at least one other video frame, then determining predictively encode the current macroblock; wherein the scaled average minimum sum of absolute distance values is configurable.

Sun teaches determining a sum of absolute distance values between the current macroblock and macroblocks from at least one other video frame, if the pixel differences between the current macroblock and the macroblock from another video frame is less than a configurable threshold value, then determining to predictively encode the current macroblock (cols. 11-12, IN STEP 50 OF FIG. 6B);and differencing between the current block of the current image and the previous macroblocks of the previous image and sum of absolute distance values (figs. 6A and 6B) for predictive coding, wherein if the sum of absolute distance values is less than a scaled average minimum sum of absolute distance values of macroblocks from at least one other video frame, then determining predictively encode the current macroblock (cols 11 and 12;

SAD_init<SAD_ave; SAD_ave = (1/numMB)((NumMB-1)*(SAD_ave)0+SAD_min), wherein 1/numMB is a scaling factor); wherein the scaled average minimum sum of absolute distance values is configurable (SAD_ave is configured).

Taking the teachings of Kuchibhalta and Sun as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Sun into the apparatus of Kuchibhalta to provide the adaptive algorithm that improves motion estimation and hence overall video encoding speed.

8. Claims 25, 43, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuchibhalta (US 5,731,835) in view of Westermann (US 6,307,886).

Re claim 25, Kuchibhalta discloses an apparatus for carrying out a method for categorizing in a video encoder (fig. 1) as at least on processing element a portion of a video frame (107 of fig. 1, note a portion of a video frame is encoded, a residual macroblock), comprising:

means for using texture information (a video macroblock inherently has texture information) in the portion to determine whether the portion comprises at most a predetermined amount of spatial information (e.g. 110 of fig. 1);

means (108 of fig. 1) for categorizing the portion of the video frame if the texture information indicates that the portion comprises at most the predetermined amount of spatial information, then categorizing the portion as non-predictive (col. 3, lines 29-38, Variance of the input macroblock (Var I) is less than Variance of the residual macroblock (Var R), 108 of fig. 1, the switch selects intramode for encoding); and

if the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information (col. 3, lines 29-38, Variance of the residual macroblock (Var R) is less than Variance of the input macroblock (Var R), 108 of fig. 1, the switch selects intermode for encoding), then

means for performing a motion estimation search (126 of fig. 1, e.g. 128 and 130 for motion estimation search in full and half pixels);

means for using motion information (126 of fig. 1) to determine whether the portion comprises at least a predetermined amount of predictive information (Predicted MB of fig. 1);

wherein the categorizing means (110 and 108 of fig. 1) categorizes if the motion information indicates that the portion comprises at least the predetermined amount of predictive information, then categorizing the portion as predictive (PREDICTED MBs of fig. 1); and if the motion information indicates that the portion does not comprise at least the predetermined amount of predictive information, then categorizing the portion as non-predictive (134-138, INTRA MB of fig. 1, IID ESTIMATE).

It is noted that Kuchibhalta does not particularly teach at least one memory element stored a set of instructions.

Westermann teaches computer readable program code means for providing and facilitating the capabilities of the encoder as shown in figure 1, where encoder comprises the determination of inter and intra macroblocks as shown in figure 6, and the computer readable program code embodied in the computer products (col. 7, lines 29-36).

Taking the Kuchibhalta and Westermann as a whole, it would have been obvious to one of ordinary skill in the art to modify the teachings of Westermann into the apparatus of

Kuchibhalta for providing an encode technique which optimizes variable bit rate bandwidth while maintaining picture quality, especially at low bit rates and low motion video applications such as surveillance, distance learning, and video conferencing.

Re claim 43, Kuchibhalta further discloses wherein motion information comprises pixel differences between the portion of the video frame and at least a portion of at least one other video frame (e.g. 128 and 130 of fig. 1).

Re claim 44, Kuchibhalta further discloses determining when the portion is categorized as predictive, whether to perform fractional-pixel motion estimation based on a quality metric associated-with the portion (130 of fig. 1).

9. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuchibhalta (US 5,731,835) in view of Westermann (US 6,307,886) as applied to claim 25, and further in view of Kato (US 6,415,055).

Re claim 42, Kuchibhalta further suggests that there are several functions that can be used to make this decision. For example, using the simplest function, if Var R is less than Var I, the IID selects the Intermode. Conversely, if Var I is less than Var R, the IID selects the Intramode (110 of fig. 1)).

However, the combination of Kuchibhalta and Westermann does not particularly disclose wherein the predetermined amount of spatial information is an average variance value of at least one other video frame, comparing the calculated variance value of the portion of the video frame to the average variance value of the at least one other, video frame; and if the variance value of the portion is less than the average variance value of the at least one other video frame,

categorizing the portion as nonpredictive; wherein the average variance value predetermined amount of spatial information is a scaled average variance value of at least one other another video frame as claimed.

However, Kato teaches calculating a variance value of the portion of the video frame to generate the texture information (col. 10, lines 9-col. 11, line 12, e.g. Eintra and Einter as variances); wherein the predetermined amount of spatial information is an average variance value of at least one other video frame (Einter= ½ (Ef+Eb), as average variance), means for comparing the calculated variance value of the portion of the video frame to the average variance value of the at least one other, video frame (Eintra<Einter, col. 11, lines 1-12); and if the variance value of the portion is less than the average variance value of the at least one other video frame (YES, Eintra<(Einter= ½ (Ef=Eb)), categorizing the portion as nonpredictive (the intra mode is select, which means the portion is intra macroblock); wherein the average variance value predetermined amount of spatial information is a scaled average variance (1/2(Ef+Eb), col. 10, lines 65-67) value of at least one other video frame.

Taking the teachings of Kuchibhalta, Westermann, and Kato as a whole, it would have been obvious to one of ordinary skill in the art to modify the teachings of Kato into the apparatus of Kuchibhalta and Westermann to provide a moving image encoding method and apparatus which is capable of increasing coding efficiency even in a case of a prediction structure where two or more B-pictures exist between I-and P-pictures or between P-pictures.

10. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuchibhalta (US 5,731,835) in view of Westermann (US 6,307,886) as applied to claim 25, and further in view of Sun (US 6,014,181).

Re claim 45, Kuchibhalta further teaches wherein using motion information of the current macroblock to determine whether to predictively encode the current macroblock comprises determining pixel differences between the current macroblock and a macroblock from another video frame with factional-pixel motion estimation (128 and 130 of fig. 1).

It is noted that the combination of Kuchibhalta and Westermann does not particularly teaches determining a sum of absolute distance values between the current macroblock and macroblocks from at least one other video frame, if the pixel differences between the current macroblock and the macroblock from another video frame is less than a configurable threshold value, then determining to predictively encode the current macroblock; if the sum of absolute distance values is less than a scaled average minimum sum of absolute distance values of macroblocks from at least one other video frame, then determining predictively encode the current macroblock; wherein the scaled average minimum sum of absolute distance values is configurable.

Sun teaches determining a sum of absolute distance values between the current macroblock and macroblocks from at least one other video frame, if the pixel differences between the current macroblock and the macroblock from another video frame is less than a configurable threshold value, then determining to predictively encode the current macroblock (cols. 11-12, IN STEP 50 OF FIG. 6B);and differencing between the current block of the current image and the previous macroblocks of the previous image and sum of absolute distance values

(figs. 6A and 6B) for predictive coding, wherein if the sum of absolute distance values is less than a scaled average minimum sum of absolute distance values of macroblocks from at least one other video frame, then determining predictively encode the current macroblock (cols 11 and 12; SAD_init<SAD_ave; SAD_ave = (1/numMB)((NumMB-1)*(SAD_ave)0+SAD_min), wherein 1/numMB is a scaling factor); wherein the scaled average minimum sum of absolute distance values is configurable (SAD_ave is configured).

Taking the teachings of Kuchibhalta, Westermann, and Sun as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Sun into the apparatus of Kuchibhalta and Westermann to provide the adaptive algorithm that improves motion estimation and hence overall video encoding speed.

11. Claims 32 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuchibhalta (US 5,731,835) in view of Kim (US 2002/0196854).

Re claims 32 and 52, Kuchibhalta does not particularly teach the quality metric comprises a sum of absolute difference (SAD) between pixel values of the portion and pixel values of a portion of at least one other video frame, comparing SAD to a threshold SAD value; and performing fractional-pixel motion estimation when the SAD is less than the threshold SAD value; and bypassing the fractional-pixel motion estimation when the SAD is greater than or equal to the threshold SAD value.

However, Kim teaches a sum of absolute difference (SAD) between pixel values of the portion and pixel values of a portion of at least one other video frame (3200 of fig. 4), comparing SAD to a threshold SAD value (3300 of fig. 4, wherein VAR' as a threshold SAD value, [0047]);

and performing fractional-pixel motion estimation when the SAD is less than the threshold SAD value (3400 of fig. 4, wherein half pixels if further calculated in fig. 6) ; and bypassing the fractional-pixel motion estimation when the SAD is greater than or equal to the threshold SAD value (INTRA coding mode, the motion estimation performs full pixel).

Taking the teachings of Kuchibhalta and Kim as a whole, it would have been obvious to one of ordinary skill in the art to modify the teachings of Kim into the apparatus of Kuchibhalta to allow a video encoding method and apparatus is presented that substantially reduces the computational requirements for motion processing by analyzing macro-blocks of down-sampled video frames to determine down-sample motion vectors from which motion vectors for the macro-blocks of the video frames are derived.

12. Claims 18-22, 24, 27, 33-34, 39-41, and 62-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuchibhalta (US 5,731,835) in view of Kodama et al. (US 5,963,673).

Claims 18, 24, 27, 62, Kuchihalta teaches an apparatus for selectively reducing processing cycles of a video codec, comprising: complexity control algorithm (110, 108, and 126 of fig. 1) categorizes portions of a predictive video frame as nonpredictive portions when texture information of the portions indicates there is less than or equal to a predetermined amount of spatial information uses motion information (col. 3, lines 29-38, Variance of the input macroblock (Var I) is less than Variance of the residual macroblock (Var R), 108 of fig. 1, the switch selects intramode for encoding), to determine whether to categorize the portions as predictive portions if the texture information of the portions indicates there is not less than or equal to the predetermined amount of spatial information, and configuring the at least one

variable of the complexity control algorithm increases the number of portions in the predictive video frame characterized as nonpredictive portions based upon the texture information (126 of fig. 1, based on 110 of fig. 1, note col. 3, lines 29-38, Variance of the residual macroblock (Var R) is less than Variance of the input macroblock (Var R), 108 of fig. 1, the switch selects intermode for encoding).

It is note that Kuchibhalta does not particularly teach means for receiving a configuration signal, and means for configuring at least one variable within a complexity control algorithm in accordance with the configuration as claimed.

However, Kodama teaches means (e.g. 58 of fig. 5) for receiving a configuration signal, and means (60 of fig. 5) for configuring at least one variable within a complexity control algorithm in accordance with the configuration to generate the texture information and motion information (MBT and MOTION VECTORS of fig. 5) to determine the macroblock type for encoding.

Taking the teachings of Kuchibhalta and Kodama as a whole, it would have been obvious to one of ordinary skill in the art to modify the teachings of Kodama into the apparatus of Kuchihalta to improve encoding efficiency.

Re claims 19-20, 33-34, 39-41, 63-65, Kodama further teaches wherein the configuration signal conveys image size information; wherein the configuration signal conveys transmission frame rate, information (58 of fig. 5); wherein configuring at least one variable within a complexity control algorithm (58 of fig. 5, feedback means control) further comprises adjusting the predetermined amount of spatial information; wherein receiving a configuration signal

comprises receive a configuration signal, that originates from a network (AMOUNT OF CODE is from the encoded signal is from the communications as network).

Re claim 21, it is well known in the art that the configuration signal conveys a user command. Therefore, the Official Notice is taken.

Re claim 22, Kuchibhalta wherein the configuration signal conveys information regarding available hardware resources (fig. 1).

Response to Arguments

13. Applicant's arguments filed 01/15/2009 have been fully considered but they are not persuasive.

The applicant stated that the application in condition for allowance or in better form for appeal. In response, the application is not allowable based upon the applied art above. The application is ready for appeal.

The applicant argues that the phrase "computer-readable" is sufficiently clear to a person of ordinary skill in the art.

It is respectfully disagreed. Although the phrase "computer-readable" is sufficiently clear to a person of ordinary skill in the art but the applicant fails to disclose in the specification. Therefore, the specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o).

The applicant further argues that "instructions" is a functional descriptive material. It is disagreed that "instructions" is not a functional descriptive material because the "instructions" can be a writing description for some one to do something and stored in the storage device, when

the person retrieves the "instructions" from the storage device, the "instructions" is displayed on the monitor for reading. This shows that the "instructions" is non-functional descriptive material.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Setheraman (US 6,037,987) discloses an apparatus and method for selecting a rate and distortion based coding mode for coding system.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tung Vo/

Primary Examiner, Art Unit 2621